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22850	7590	05/21/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			TSAI, HENRY	
			ART UNIT	PAPER NUMBER
			2183	

DATE MAILED: 05/21/2004

23

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/639,946

Applicant(s)

NAGAYA ET AL.

Examiner

Henry W.H. Tsai

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 19,22-25,32-35,37-40,58-68 and 70-90 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34,35,61,65-67,76,83-85 and 88 is/are allowed.
- 6) ☒ Claim(s) 19,22-25,32,33,37-40,58-60,62-64,68,70-75, 77-82,86,87,89 and 90 is/are rejected.
- 7) ☒ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 2183

**DETAILED ACTION**

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 112***

2. Claims 19, 23-25, 59, 60, 68, and 71-75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 19, lines 4-5, "said tip includes at least one edge corner having a corner angle of greater than 90°" is unclear since in a quadrilateral-shaped plate, if there are three edge corners having a corner angle less than 90°, there can be only one edge corner (the fourth corner) having a corner angle of greater than 90°. Similar problems exist in the other claim 68.

Art Unit: 2183

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 32, 33, 37-40, 58, 62, and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Satran et al. (U.S. Patent No. 5,718,540), hereafter referred to as Satran et al.

Referring to claim 32, Satran et al. discloses, as claimed, a cutting tool (16, see Fig. 13) comprising: an end-milling tool body (16, see Fig. 13) having a distal end; and a plurality of tips (II, see Fig. 13) mounted to the distal end of the tool body (16, see Fig. 13), each tip of the plurality of tips comprising a plate of substantially quadrilateral shape (see Fig. 7), the plate having a first corner (between cutting edges 5'b and 5'c of the cutting insert II, see Fig. 7) having a corner angle of less than 90° and an adjacent second corner (the other edge corner between cutting edges 5'b and 5'c of the cutting insert II, see Fig. 7) having a corner angle of less than 90°, wherein at least one of the first corner (between

Art Unit: 2183

cutting edges 5'b and 5'c of the cutting insert II, see Fig. 7)  
and the second corner (the other edge corner between cutting  
edges 5'b and 5'c of the cutting insert II, see Fig. 7) is  
arranged to project along an outer periphery of the distal end of  
the tool body (16, see Fig. 13).

As to claim 33, Satran et al. also discloses: a cutting  
edge extending from the first corner inward toward the third  
corner in a radial direction (along R, see Fig. 14) of the tool  
body (16, see Fig. 13) is defined as a front cutting edge  
extending to a rotation axis (along X, see Fig. 13) of the tool  
body (16, see Fig. 13).

As to claim 37, Satran et al. also discloses: each tip has  
a third edge corner (the other edge corner between cutting edges  
5'b and 5'c of the cutting insert II, see Fig. 7) having a  
corner angle of less than 90°.

As to claim 38, Satran et al. also discloses: the plate has  
a seating face (1'. See Fig. 9) and a cutting edge face  
(including C', and B', See Fig. 9), wherein each tip has at least  
one side surface (between 1' and 6', See Fig. 8) that extends  
between the seating face (1'. See Fig. 9) and the cutting edge  
face (including C', and B', See Fig. 9), wherein the at least one  
side surface outwardly inclines from the seating face to the  
cutting edge face (see Fig. 9).

Art Unit: 2183

As to claim 39, Satran et al. also discloses: the seating face (1'. See Fig. 9) is parallel to the cutting face (B', See Fig. 9).

As to claim 40, Satran et al. also discloses: the seating face (1'. See Fig. 9) is not parallel to the cutting face (C', See Fig. 9).

As to claims 58, Satran et al. also discloses: all of the plurality of tips (II, see Fig. 7 and Fig. 13) are identical in shape.

As to claim 62, Satran et al. also discloses: each tip of said plurality of tips has two opposing cutting edges (see Fig. 7, the cutting edges at upper and left portions of the cutting insert II) defined as long cutting edges and another two opposing cutting edges (see Fig. 7, the cutting edges at lower and right portions of the cutting insert II) defined as short cutting edges, and wherein said long cutting edges are not parallel to one another (since they form a corner, see Fig. 7).

As to claim 63, Satran et al. also discloses: one of said short cutting edges extends between the first corner (at the left lower corner see Fig. 7) and the second corner (at the right lower corner see Fig. 7).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 19, 22-25, 59, 60, 64, 68, 70-75, and 77-82, 86, 87, 89 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Satran et al. in view of Striegl (U.S. Patent No. 4,182,587) hereafter referred to as Striegl.

Satran et al. discloses the claimed invention except for: implicitly indicating comprising the plurality of tips comprising at least four tips (in claims 64 and 79-81); comprising the plate includes at least one corner having a corner angle of greater than 90° (in claims 19, 22, 68, 70, and 77, and 90); and comprising a cutting edge extending between the first edge corner and the second edge corner is not parallel to an opposite cutting edge (in claims 22, 70).

Art Unit: 2183

Striegl discloses a milling cutter (20, see Fig. 1) comprising: the plurality of tips (33, 40, see Figs. 1, 6, and 6, and col. 3, lines 37-45) comprising at least four tips; and the plate (40, see Fig. 7) includes at least one corner (the corner forms angle 64, see Fig. 7, see also Col. 4, lines 29) having a corner angle of greater than  $90^\circ$ ; and comprising a cutting edge (60, see Fig. 7) extending between the first edge corner and the second edge corner is not parallel to an opposite cutting edge (63, see Fig. 7).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Satran et al.'s tool to comprise the plurality of tips comprising at least four tips as taught by Striegl, in order to distribute and decrease the cutting force applied to each cutting tip of the Satran et al. cutting tool.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Satran et al.'s tool to comprise the plate includes at least one corner having a corner angle of greater than  $90^\circ$  and comprise a cutting edge extending between the first edge corner and the second edge corner is not parallel to an opposite cutting edge, as taught by Striegl, in order to facilitate the cutting process and milling the workpiece as required in practice. **Further, as shown in re**



Art Unit: 2183

Dailey, 149 USPQ 47 (CCPA 1976), to make changes in form/shape generally does not provide patentable weight to the claimed invention.

As to claims 23 and 71, Satran et al. also discloses: the plate has a seating face (1'. See Fig. 9) and a cutting edge face (including C', and B', See Fig. 9), wherein each tip has at least one side surface (between 1' and 6', See Fig. 8) that extends between the seating face (1'. See Fig. 9) and the cutting edge face (including C', and B', See Fig. 9), wherein the at least one side surface outwardly inclines from the seating face to the cutting edge face (see Fig. 9).

As to claims 24 and 72, Satran et al. also discloses: the seating face (1'. See Fig. 9) is parallel to the cutting face (B', See Fig. 9).

As to claims 25 and 73, Satran et al. also discloses: the seating face (1'. See Fig. 9) is not parallel to the cutting face (C', See Fig. 9).

As to claims 59, 74, and 86, Satran et al. also discloses: each tip of said plurality of tips has two opposing cutting edges (see Fig. 7, the cutting edges at upper and left portions of the cutting insert II) defined as long cutting edges and another two opposing cutting edges (see Fig. 7, the cutting edges at lower and right portions of the cutting insert II) defined as short

Art Unit: 2183

cutting edges, and wherein said long cutting edges are not parallel to one another (since they form a corner, see Fig. 7). Note either cutting edges 73/70 in Fig. 10 or 60/63 in fig. 7 can be also defined as the long cutting edges not parallel to one another as claimed.

As to claims 60, 75, and 87, Satran et al. also discloses: one of said short cutting edges extends between the first corner (at the left lower corner see Fig. 7) and the second corner (at the right lower corner see Fig. 7).

As to claim 78, Satran et al. also discloses: at least one of the first edge corner (at the left lower corner see Fig. 7) and the second corner (at the right lower corner see Fig. 7) is arranged along a front edge of the distal end of the tool body (16, see Fig. 13).

Regarding claims 79-81, Striegl also comprises: a second, third, and fourth tips mounted to the distal end of the tool body, said fourth tips (40, 40, 40, see Fig. 1) each comprising a plate including a first edge corner having a corner angle of less than  $90^\circ$  (angle 61, see Fig. 7), and an adjacent second edge corner wherein at least one of the first edge corner and the second edge corner of said fourth tip is arranged along the outer periphery of the distal end of the tool body (20, see Fig.1).

Art Unit: 2183

As to claim 82, Satran et al. also discloses: all of the plurality of tips (II, see Fig. 7 and Fig. 13) are identical in shape.

As to claim 89, Satran et al. also discloses: said first tip has a third edge corner (the other edge corner between cutting edges 5'b and 5'c of the cutting insert II, see Fig. 7) having a corner angle of less than 90 °.

#### **Response to Arguments**

7. Applicant's arguments mailed 4/8/04 have been considered but are moot in view of the new ground(s) of rejection.

#### **Allowable Subject Matter**

8. Claims 34, 35, 61, 65-67, 76, 83-85 and 88 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter: Satran et al. and Striegl, the closest references, and the other prior art do not teach or fairly suggest: one of the long cutting edges in a first of the plurality of tips projecting towards the distal end of the

Art Unit: 2183

tool body is defined as a first front peripheral cutting edge and one of the short cutting edges in the first of the plurality of tips is defined as a first outer peripheral cutting edge; and one of the short cutting edges in a second of the plurality of tips projecting towards the distal end of the tool body is defined as a second front peripheral cutting edge and one of the long cutting edges in the second of the plurality of tips is defined as a second outer peripheral cutting edge (in claim 34); and

the sub-cutting tooth portion is provided adjacent a joint between said first cutting edge and said second cutting edge; said sub-cutting tooth portion is slightly inclined with respect to main cutting tooth portion; and wherein said corner angle of said first edge corner is defined as an angle between said main cutting tooth portion of said first cutting edge and said second cutting edge (in claims 61, 65, 76, and 88);

the first tip and said third tip are provided within a first groove on said tool body, said first tip and said third tip being provided at different locations along the axis of rotation, said first tip and said third tip being spaced apart along the axis of rotation; and said second tip and said fourth tip are provided within a second groove on said tool body, said second tip and said fourth tip being provided at different locations

Art Unit: 2183

along the axis of rotation, said second tip and fourth tip being spaced apart along the axis of rotation (in claims 66 and 84); or

first, second, third and fourth tips; one of said long cutting edges of said first tip extends along the outer periphery; one of said short cutting edges of said second tip extends along the outer periphery; one of said long cutting edges of said third tip extends along the outer periphery; and one of said long cutting edges of said fourth tip extends along the outer periphery (in claim 83) in combination with the other limitations in the respective independent claims and the combination is not obvious.

#### ***Contact Information***


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Henry Tsai whose telephone number is (703) 308-7600. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner supervisor, Eddie Chan, can be reached on (703) 305-9712. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to

Art Unit: 2183

the TC 2100 receptionist whose telephone number is (703) 305-3900.

11. In order to reduce pendency and avoid potential delays, Group 2100 is encouraging FAXing of responses to Office actions directly into the Group at fax number: 703-872-9306.

This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into Group 2100 will be promptly forward to the examiner.

  
HENRY W. H. TSAI  
PRIMARY EXAMINER

May 17, 2004